REMARKS

Claims 1-4 and 6 are amended to clarify the subject matter. Claims 1-6 are pending in the application.

Drawings

Figs. 3 and 6 are amended to be consistent with the specification. In particular, in Fig. 3 reference numerals were added to the trip actuator as described in the specification. With respect to Fig. 6, the relay is amended to show that it is flexible as described in the specification and a trip button is added. A set of replacement drawing sheets 1-5 is being submitted with this response. No new matter is added.

Specification

Applicants wish to point out that the amendments made to the specification in the Preliminary Amendment dated September 21, 2004 were made in error and through inadvertence. In particular, the specification amendments made in the Preliminary Amendment were directed to a different application, not the present application. Applicants respectfully request that the amendments to the specification made in the Preliminary Amendment be withdrawn by acceptance of the attached substitute specification. In the substitute specification, amendments are made to correct minor errors. No new matter is added.

Claim Rejections under 35 U.S.C. 102

The rejection of claims 1-6 under 35 U.S.C. 102 (b) as being anticipated by DiSalvo (USPN 6,246,558) is traversed.

Referring to Figs. 2-5 of the present invention, there is illustrated components used during testing and resetting operations in accordance with the principles of the invention. The testing portion has a circuit interrupter and electronic circuitry capable of sensing faults, e.g., current imbalances, on the phase and/or neutral conductors. In the embodiment for the GFCI receptacle, the circuit interrupter includes a coil assembly or

solenoid 90, a plunger 92 having a rectangular cross section responsive to the energizing and de-energizing of the coil assembly, and a reset pin 120 that interacts with the plunger 92. The solenoid 90 is pivotly supported by a means of a flexible support member 96 which allow an end of the solenoid to pivot (move down and up) in response to the movement of the reset pin 94 of the reset/test button 30 (FIG. 2). The flexible support member 96 is coupled securely to the solenoid and anchored to, for example, the back cover of the GFCI to allow the front portion of the solenoid to pivot or rock up and down about the support member 96 when a force in the up or down direction is applied to the plunger 92 by the reset pin 94. Located immediately below contacting plate 100 on the end of the solenoid is a movable arm 102 that supports a contact 104 and a fixed arm 106 which supports a contact 108. Movable contact 104 cooperates with fixed contact 108. Contacts 104, 108 are test contacts 110 which, when closed, allows the circuit of Fig. 6 to perform the test function which determines if the GFCI and associated circuitry is operating properly.

The plunger 92 of the solenoid 90 supports an oval or rectangular shaped opening 124 having its long axis aligned with the long dimension of the plunger and its short axis aligned with the width of the plunger. The shaped opening is sized to allow the reset pin 120 of the reset button and a circular shaped holding projection 122 rigidly attached to the lower end of the pin to pass thru the opening 124. Reset pin 94 is biased by a return spring 126 to move up. The geometry and relationship of plunger 92 and reset pin 94 are such that when the solenoid is not conducting the plunger is fully extended and the holding projection 122 is located either on top of or under the plunger and is offset relative to opening 124 such that holding projection 122 can not pass thru opening 124. Thus, when the holding projection is positioned on top of plunger 92, a downward force on the pin will exert a downward force on the plunger which, in turn, will urge the plunger 92 and the coil 90 to pivot or swing down against the resisting force of the flexible support member 96. In a similar manner, when the holding projection is positioned below the plunger 92, the return spring 126 around the reset pin will exert an upward force on the plunger which, in turn, will urge the plunger 92 and coil 90 to pivot up against the resisting force of the flexible supporting member 96.

The reset pin 94 is biased to be in the up position by return spring 126. Initially, the solenoid is in its horizontal position (see Fig. 3). The holding projection 122 is located on top of the plunger and not in alignment with opening 124, and the contacts under and above the solenoid are open. A downward force now applied to the reset button will act against the upward force of the return spring 126 to move the reset button down. The holding projection 122, not being aligned with opening 124 in the plunger, contacts the upper surface of the plunger and forces the plunger and the end of the solenoid to move down. At some instance, insulating contacting plate 100 contacts and moves the movable contact arm 102 down to close the test contacts 104, 108 and a test is performed. If a defect is present, then nothing further happens because the solenoid is not energized. It does not fire. The solenoid assembly remains in the down position and the main line-load contacts 118,114 do not close.

If, however, all circuits are operating properly, then the solenoid 90 is energized and the plunger is drawn into the solenoid. As the plunger moves into the solenoid, the opening in the plunger moves into alignment with the holding member 122. At this instant, as downward pressure is still being applied to the reset button, the holding projection falls through the opening and is then located below the bottom surface of the plunger. When the holding member falls through the opening, the solenoid, through the biasing action of the support spring, is urged to return to its horizontal position and the test contacts open. As the test contacts open, the flow of current to the solenoid is stopped, the plunger is biased to return to its extended position and the holding projection on the end of the reset pin is now located under the plunger and not in alignment with the opening. The downward force is now removed from the reset button and the reset button return spring urges the reset pin to move up. The upward force of the reset pin return spring is greater than the restoring force of the flexible support member and, therefore, as the reset pin moves up, the holding projection 124, which is now located under the plunger and not in alignment with opening, pulls the plunger and the end of the solenoid 90 to the up position until the insulating contacting plate contacts and closes the main contacts 118, 114 which allows current to flow from a source to a load. See Fig. 5.

Thus, the reset button, in combination with a relay coil assembly that is supported by a flexible support member, performs a double mode function, that of first testing the circuit and if the circuit tested passes the test, resetting the circuit to allow power to be passed to the load.

In contrast, DiSalvo discloses a GFCI device having a coil assembly that is fixed to the device. For example, FIG. 2 of DiSalvo shows a GFCI 10 that includes a circuit interrupter having a coil assembly 90 that is fixed to the device, a plunger 92 responsive to the energizing and de-energizing of the coil assembly and a banger 94 connecting to the plunger 92. The coil assembly is responsive to the sensing of a ground fault. Referring to FIG. 8, to test the device, test button 30 is pressed which causes test contacts 104, 106 to make contact and energize the coil assembly. In other words, the test button does not move or pivot the coil assembly to initiate the test function, rather, it is the test button that move to make contact with the test contacts to initiate the test function. The coil assembly is fixed and does not move in response to the movement of the test button. Thus, the coil assembly of DiSalvo is fixed to the device and the coil assembly does not move in response to the movement of an actuator whereas the coil assembly of the present invention is supported by a flexible member and moves in response to the movement of an actuator.

Claim 1 of our invention has been amended to clearly avoid DiSalvo by reciting a circuit interrupting device that includes the structure of a "... circuit interrupting portion comprising a solenoid pivotly supported by a flexible support member...; a reset actuator ... which, when depressed, causes the solenoid to pivot about the flexible support member to closed test contacts to initiate a test ...." These features are not disclosed in DiSalvo. Thus, DiSalvo, fails to disclose or suggest the structure of claim 1 of our invention. Claims 2-5 depend in varying scope from claim 1 and, therefore, also avoid the cited reference for at least the same reasons as discussed above.

Claim 6 has been amended in a manner similar to claim 1 above. Applicants respectfully submit that Claim 6 avoids the cited reference for at least the same reasons as claim 1 discussed above.

For the reasons explained above, Applicants believe that the application is in condition for allowance. Early and favorable reconsideration is respectfully requested. The Commissioner is hereby authorized to charge any fees which may be required for the Amendment, or credit any overpayment to Deposit Account No. 50-1561 of Greenberg Traurig, LLP.

In the event that an extension of time is required to make this Amendment timely filed, the Commissioner is requested to grant a petition for that extension of time which is required to make this Amendment timely and is hereby authorized to charge any fee for such an extension of time or credit an overpayment for an extension of time to Deposit Account No. 50-1561 of Greenberg Traurig, LLP.

Respectfully submitted,

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IN THE DRAWINGS:

Please make the following amendments to the drawings:

Fig. 3: Reference numerals 26, 104, 108, 114, 118, 202, 204 and 206 are added to the trip actuator to be consistent with the specification.

Fig. 6: Reference numerals 102 and 106 corresponding to contact arms are removed. In addition, arrows are added between the coil solenoid and the reset-test button to show that the solenoid is flexible and responsive to a user pressing the button as described in the specification. Furthermore, a dashed lined box is drawn adjacent the relay coil to indicate that the relay coil moves in response to the activation of the actuator. Also, a solid line from the relay coil to the relay contacts is replaced with a dashed line to indicate a mechanical link between the two components. A trip button is added to be consistent with the specification.

A complete set of replacement drawings, Figs. 1-9 (5 Sheets), is attached hereto. Please replace the drawings, Figs. 1-9 (5 sheets) presently on file with the replacement drawings, Figs. 1-9 (5 sheets) attached hereto.

The drawings attached include no new matter and do not affect the scope of the claims.